

### REMARKS

Claims 1-12 and 24-31 are pending. Claims 13-23 are withdrawn without traverse and claims 24-27 have been canceled. New claims 32-84 have been added. In the action, the Examiner objected to the drawings for various formalities. The Applicants have amended the drawings and respectfully submit that the amendments render moot the objections to the drawings. The Examiner also objected to the specification under 35 U.S.C. 112, 1<sup>st</sup> paragraph. The Applicants would like to direct the Examiner's attention to, for example, Figure 2B, which shows that the electrodes may be deposited, unattached to one another, on different faces of the tip. And the electrodes may be independently activated for bipolar applications. Accordingly, the tip may be used for either monopolar or bipolar applications. The Applicants respectfully submit that such disclosure is sufficiently enabling, and thus, the objections should be withdrawn. No new matter has been added.

The Examiner also rejected claims 26 and 31 under 35 U.S.C. 112, 2<sup>nd</sup> paragraph. The Applicants have canceled claim 26 and amended claim 31, and believe the amendments render moot the rejections to these claims.

The Examiner also rejected claims 1, 2, 5, 6, 9, and 10 as being anticipated by Allen. In addition, the Examiner rejected claims 1, 8, 10, 11, 24, and 25 as being anticipated by Degler. The Examiner further rejected claims 12 and 26 as being obvious over Allen in view of Kumar. Claim 27 was also rejected as being obvious over Degler in view of Hoskin. Claims 30 and 31 were rejected as being obvious over Degler in view of Haenggi. Allowance of claims 3, 4, 7, and 28 is appreciatively noted. The Applicants traverse the rejections to the claims as follows.

Allen does not teach or suggest "at least one electrode attached to a non-mechanical cutting edge of the tip," as called for in amended claims 1, 29, 30, and new claims 32 and 44. A careful reading of Allen discloses that "[c]onductive electrodes 15 are deposited on opposite sides of the cutting edge 11 and are separated by insulated space 16." [Col. 3:2-4; FIG. 1.] Allen also states that this configuration is "essential to the Herezog principle of operation [in] that they must be in electrical contact with a bridging medium (e.g. moist tissue and/or physiological fluid) in order to complete the circuit." [Col. 3:17-21.] Thus, Allen discloses that electrodes are

deposited on both sides of a cutting edge and that the electrodes must be deposited on both sides of the cutting edge to complete the circuit. On the other hand, as disclosed in several embodiments by the Applicants, at least one electrode is deposited on a non-mechanical cutting edge of the tip. Indeed, it is essential that the cutting edge be exposed during cauterizing procedures and the cutting edge itself be mechanically sharp to perform, for example, incisions. The Applicants respectfully submit that Allen does not anticipate amended claims 1, 29, and 30 or new claims 32 and 44 and their dependant claims, and thus, these claims should be allowed.

Degler also fails to teach or suggest a tip having a mechanical cutting edge and at least one electrode attached to a non-mechanical cutting edge of the tip, as called for in amended claims 1, 29, 30, and new claims 32 and 44. Rather, Degler describes a blade in which a beveled edge is formed from the electrode itself. Thus, the electrode and the cutting surface are formed from the same material. And thus an electrode cannot be attached to a non-mechanical cutting edge of a tip as recited in the Applicants' claims.

To perform cauterizing, Degler does not use the blade itself. Instead, Degler performs cutting "depending on the wave form used when the radio frequency electrical energy bridges the gap across the conductors through the tissue 70." [Col. 4:27-29.] In contrast, the Applicants disclose that the electrode is attached to a tip that itself has a mechanical cutting edge suitable to perform cutting without using electrical energy. In addition, Degler fails to teach an electrode attached to a mechanical cutting edge, since Degler does not disclose such an edge. The Applicants respectfully submit that Degler does not anticipate amended claims 1, 29, and 30 or new claims 32 and 44 and their dependant claims, and thus, these claims should be allowed.

Neither Kumar, Hoskin, nor Haenggi, alone or in combination, cure the defects of one or more of Degler or Allen. Kumar, like Degler, teaches away from the Applicants' claims. Kumar does not disclose a device that includes a mechanical cutting edge and at least one electrode attached to a non-mechanical cutting edge of the tip. In particular, Kumar discloses: "The function of cutting is the movement of an electrode through tissue while applying electrical current to individual cells. The cells which come into contact with the electrode are vaporized, which sequentially separates the tissue to produce the cutting effect." [Col. 9:47-50.] Thus, Kumar, like Degler, does not disclose a mechanical cutting edge.

Applicant : Henrick K. Gille et al.  
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Hoskin does not teach or suggest attaching an electrode to a non-mechanical cutting edge of a tip. Rather, Hoskin teaches away by using an optical fiber bundle to heat a diamond blade itself without the use of electrodes. [See .e.g., Col. 2:38-45.]

Haenngi also does not teach or suggest a tip having a mechanical cutting edge and an electrode coupled to a non-mechanical cutting edge of the tip. In fact, Haenngi, like Degler and Kumar, teaches that electrical energy is supplied to the blade in order to perform cutting procedures. [See e.g., Col. 6:34-38; Col. 7:46-55.]

In view of the foregoing, neither Kumar, Hoskin, nor Haenngi, alone or in combination with one or more of Allen or Degler, render claims 1, 29, 30, 32, or 44 obvious or their respective dependant claims. Thus, the Applicants respectfully submit the rejections to the claims as being obvious should be withdrawn.

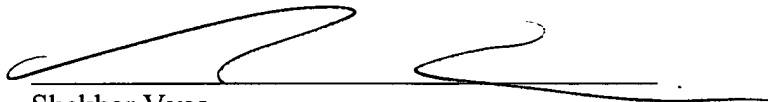
Attached is a marked-up version of the changes being made by the current amendment.

Applicant asks that all claims be allowed. Enclosed is a \$342 check for excess claim fees and a \$460 check for the Petition for 3 months Extension of Time fee. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: \_\_\_\_\_

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Shekhar Vyas  
Reg. No. 46,166

Fish & Richardson P.C.  
4350 La Jolla Village Drive, Suite 500  
San Diego, California 92122  
Telephone: (858) 678-5070  
Facsimile: (858) 678-5099

**Version with markings to show changes made**

**In the specification:**

Paragraph beginning at page 5, line 12 has been amended as follows:

FIG. 4 diagrammatically illustrates an example of a cutting and cauterizing surgical tool 100. The surgical tool 100 includes a handle 120. For simplicity, the following discussion will assume that the tip 1 is coupled to the [member 101] handle 120. However, the tip 50 or other similar tips can also be used.

Paragraph beginning at page 6, line 19 has been amended as follows:

FIG. 5A illustrates the tip 1 in a fourth embodiment. In FIG. 5A, [a conductor] an electrode 200 slides parallel to the face 6, and across a surface 7 of the tip 1. The electrodes 10, in this embodiment, may be optional. FIG. 5B shows the tip 50 in a third embodiment. In FIG. 5B, the conductor 200 slides across a surface 55 of the tip 50. The tip 50 may optionally include the electrodes 65.

Paragraph beginning at page 6, line 24 has been amended as follows:

FIG. 8 shows an example of a push/pull device 204 for sliding the [conductor] electrode. FIG. 8 shows the tip 1 coupled to the handle 120 with the integrated push/pull device 204. Alternatively, the tip 1 could be replaced with the tip 50 and also be used with the device 204. The device 204 includes a body 206 and a projection 208. The [conductor] electrode 200 is coupled to a distal end 209 of the body 206. The contact electrode 130 is coupled to a proximal end 211 of the body 206. In this configuration, the contact electrode 130 and the electrode 200 are electrically coupled together inside the body 206, such that electrocautery energy can be delivered to the electrode 200.

**In the claims:**

Claims 24-27 have been cancelled.

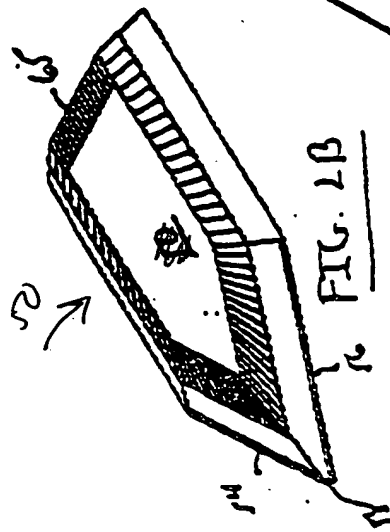
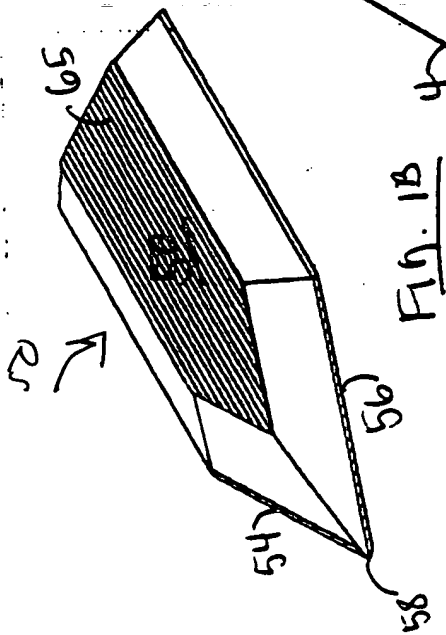
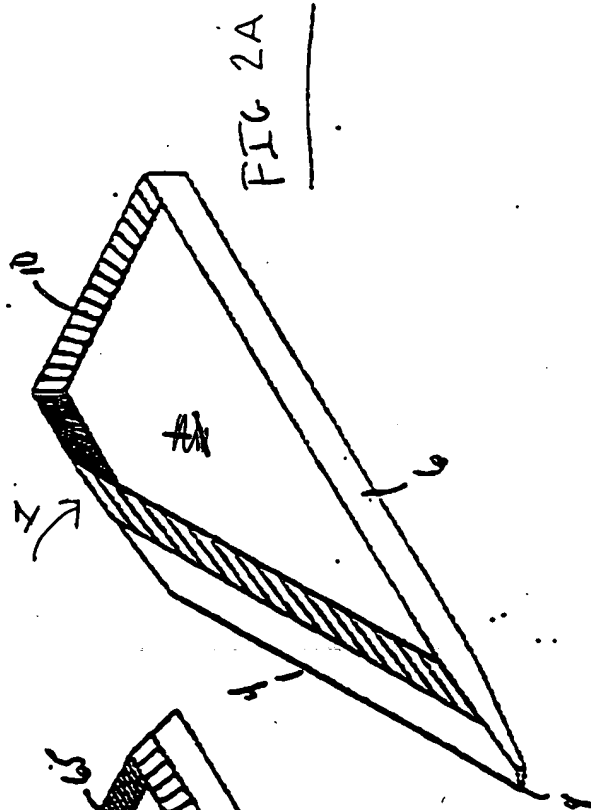
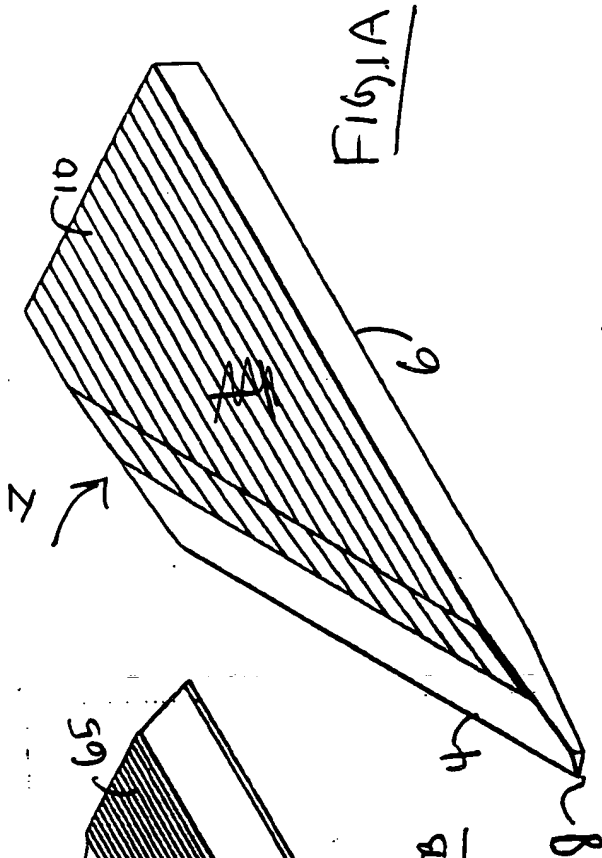
Claims 13-23 have been withdrawn.

Claim 1, 3, 7, 12, 29, 30, and 31 have been amended as follows:

1. A surgical tool, comprising:  
a tip having at least one mechanical cutting edge; and  
at least one electrode [formed integral with the tip] attached to a non-mechanical cutting edge of the tip.
3. The surgical tool of claim 1, wherein the at least one electrode comprises at least one wire rod, the wire rod having a thickness of about [0.25] 0.6 mm or less.
7. The surgical tool of claim 4, wherein the at least one electrode comprises a wire rod, the wire rod having a thickness of about 0.6 mm or less.
12. The surgical tool of claim 1, wherein the at least one electrode comprises one of titanium nitride, silicon carbide, [or] and tungsten carbide.
29. A system for cauterizing and cutting, comprising:  
a surgical tool having a tip and a handle coupled to the tip, the tip including a mechanical cutting edge and at least one electrode [formed integral with the tip] attached to a non-mechanical cutting edge of the tip;  
a contact electrode passing through the handle and electrically coupled to the at least one electrode; and  
an energy source coupled to the handle to [delivery] deliver electrocautery energy to the at least one electrode via the contact electrode.
30. A surgical tool, comprising:  
a tip having at least one mechanical cutting edge and [a plurality of electrodes] at least one electrode attached to a non-mechanical cutting edge of the tip, the tip being removably and frictionally engaged to a handle; and

a contact electrode formed inside the handle, the contact electrode being in electrical communication with the [plurality of electrodes] at least one electrode when the tip is removably and frictionally engaged to the handle.

31. The surgical tool of claim 30 further comprising a button formed integral with the handle and an energy source in electrical communication with the contact electrode, the electrical source delivering an electrical current to the tip in response to the button being pressed.



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FIG. 3

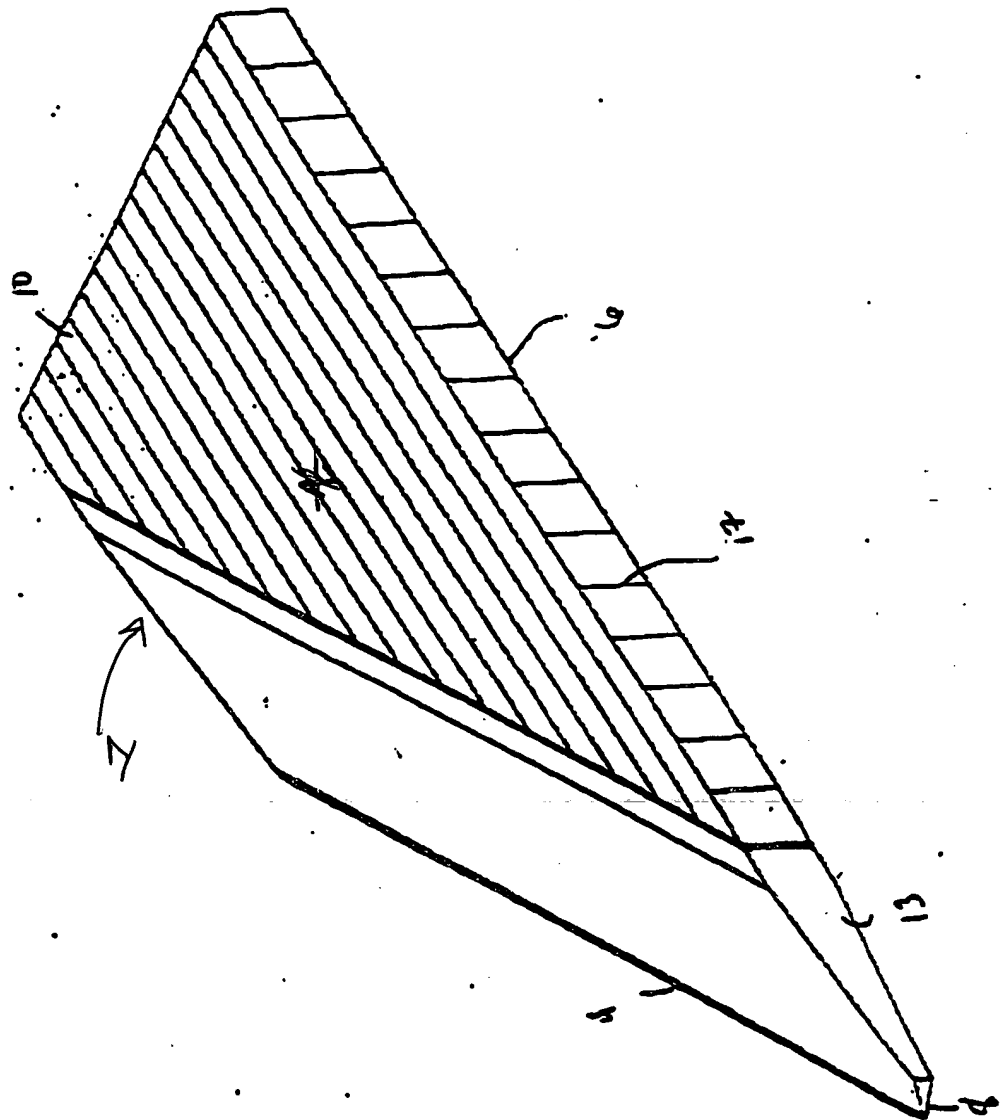
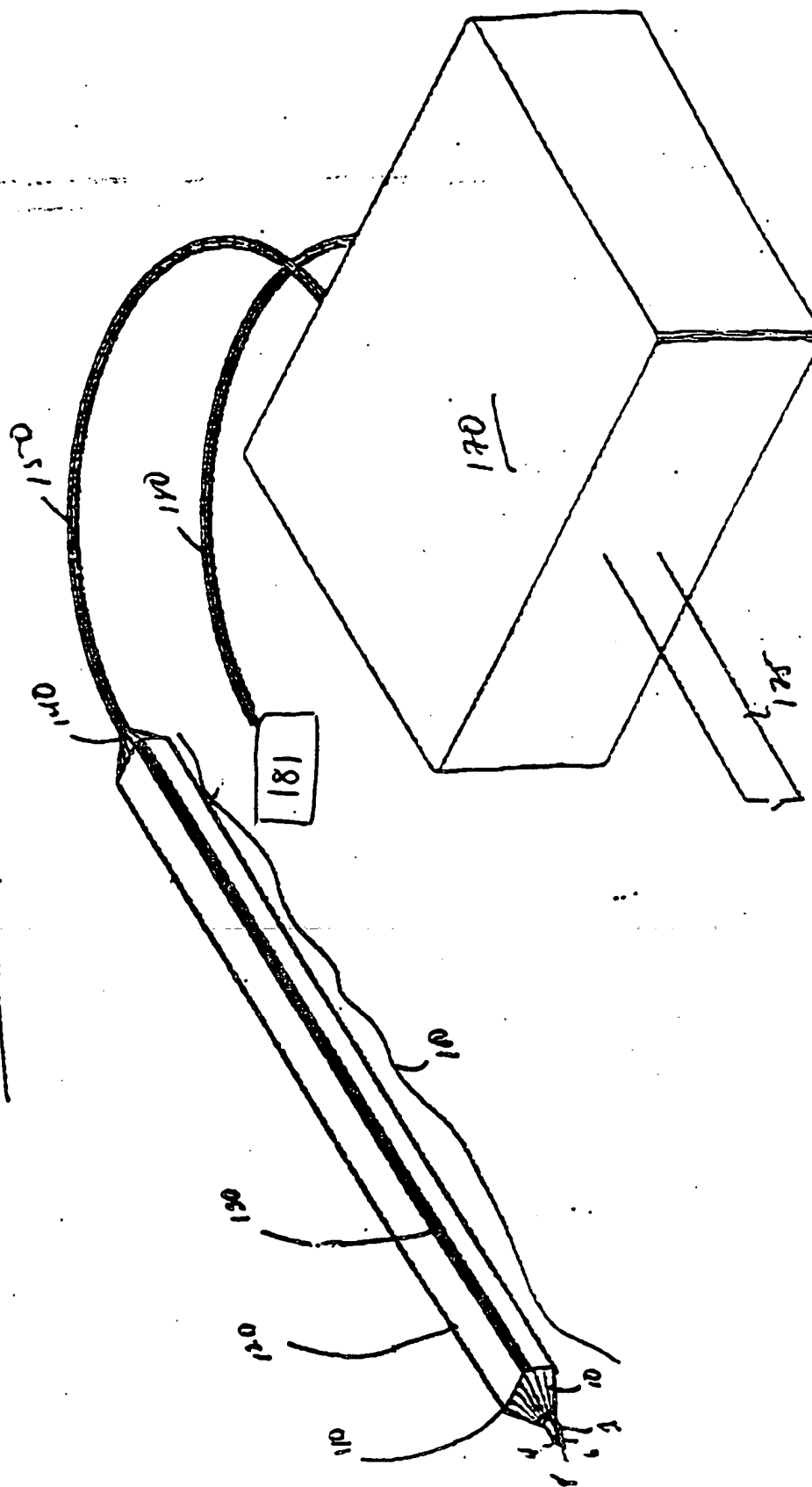
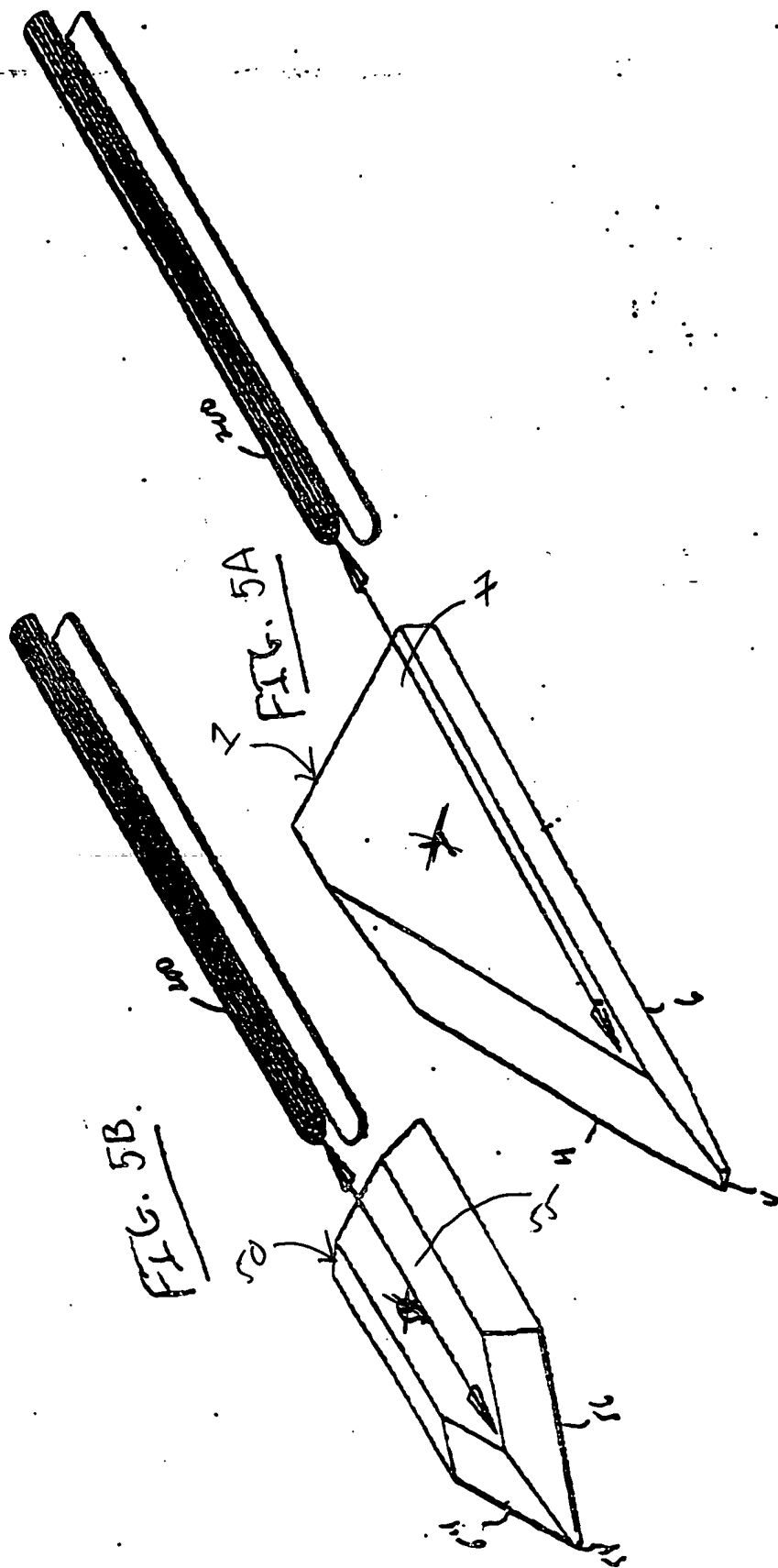




FIG. 4





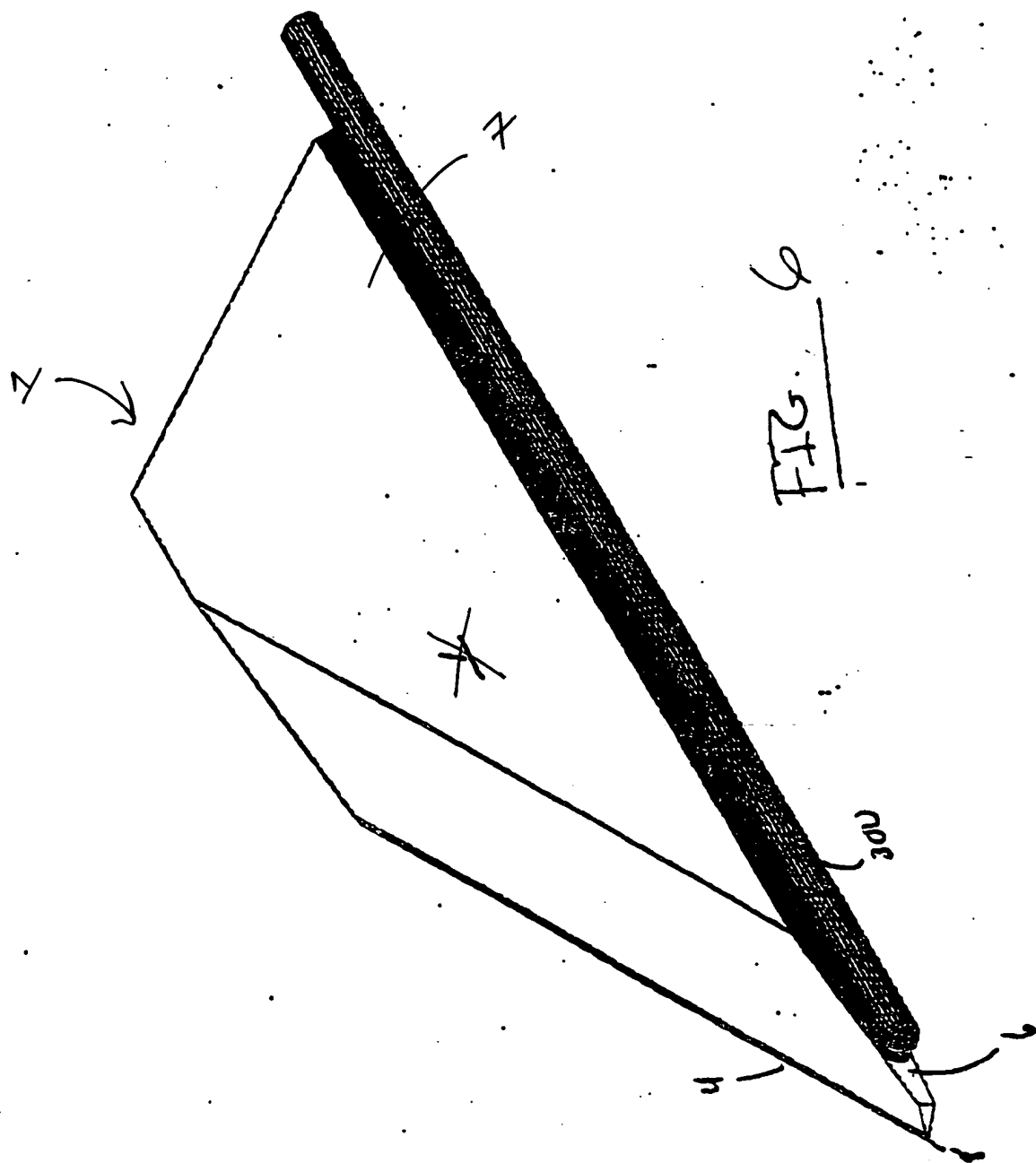
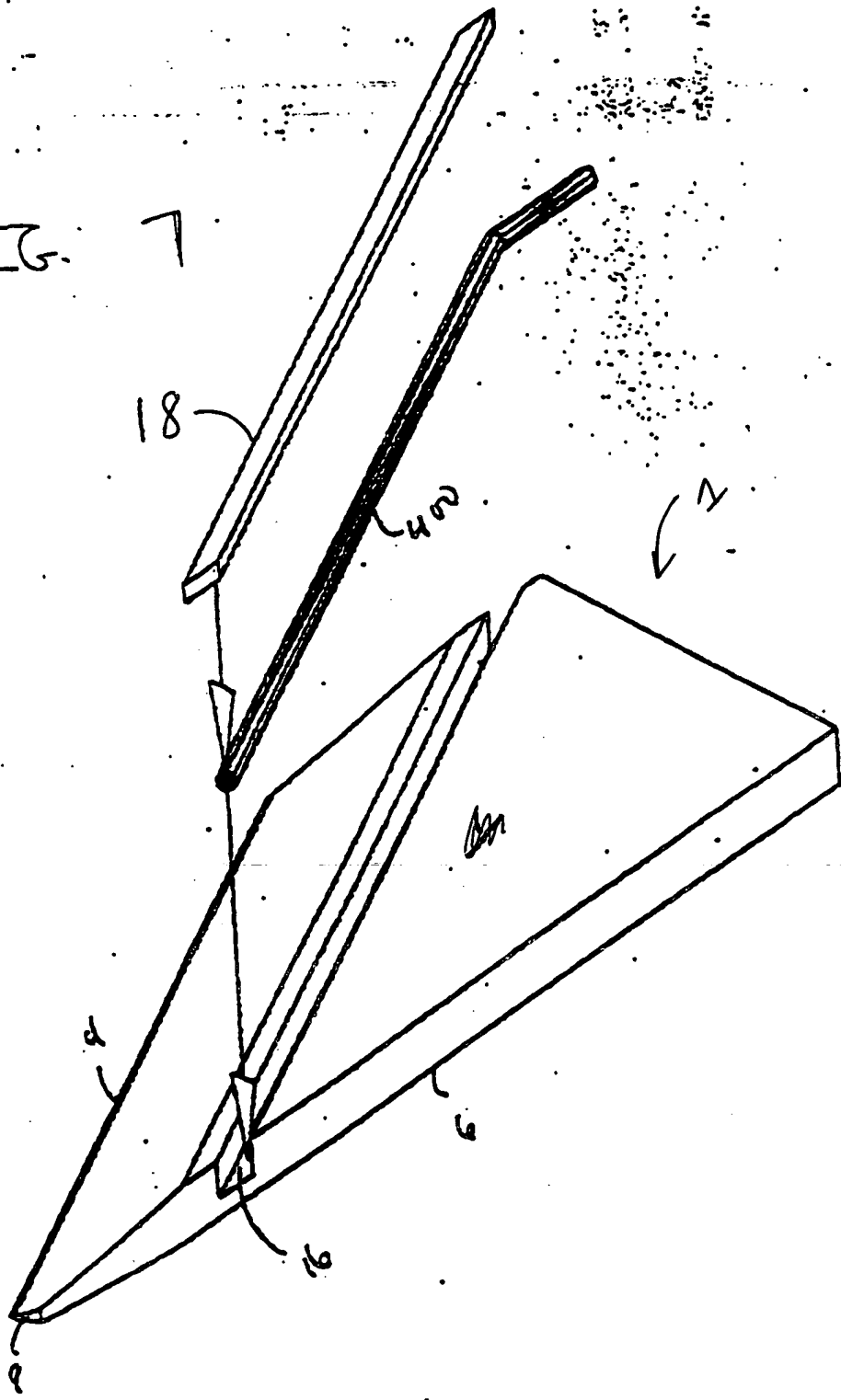


FIG. 7



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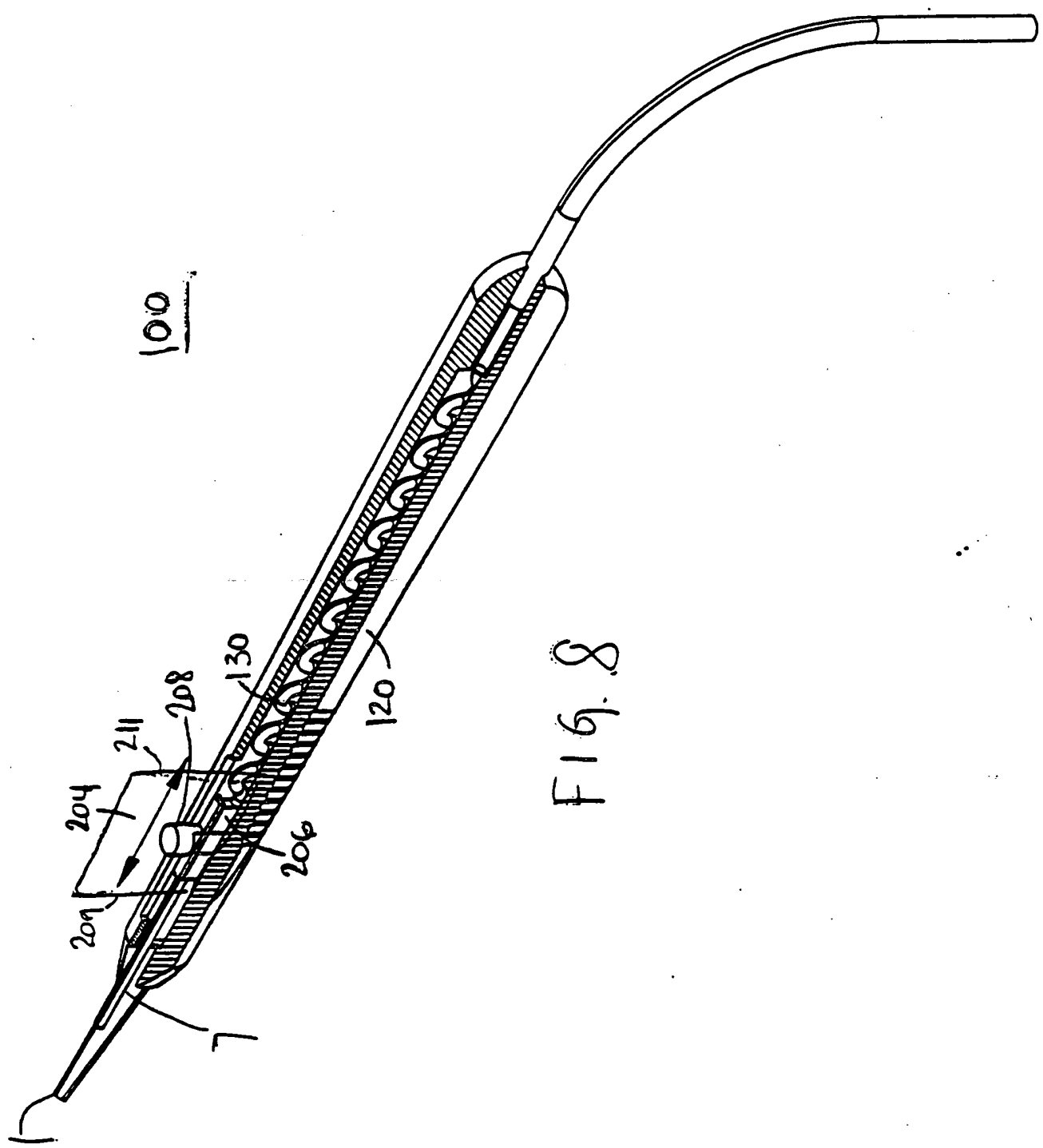


FIG. 8

